Good morning, Mr. Chairman and members of the Senate Judiciary Committee.

My name is Gilda Clancy, I am a former member of the legislature and stand today representing Montana Eagle Forum. Our motto is "working to build a better educated, safer, stronger America based on traditional values for God, country and family.

We stand in opposition to SB 236.

Being respectful of the committee's time, I will read – in part – testimony written by Samuel Candler Dobbs, Professor of Economics and Law at the Emory University, Atlanta, GA. This statistical information was given before the U.S. Senate Judiciary Committee on February 1, 2006.

Mr. Dobbs includes his background and qualifications plus his research in detail in the original written testimony which I will hand into the Committee Secretary. Any member of the committee is welcome to read it in its entirety.

The data Mr. Dobbs has used is from the fifty states as well as all the counties in the United States. Researchers have come to a conclusion that capital punishment does indeed deter further murders.

Over the period from 1977 to 1996, the panel of researchers found a substantial deterrent effect; both death row sentences and executions result in decreases in the murder rate. A conservative estimate is that each execution results in, on average, 18 further murders. They found they same result using state data instead of county data.

A study was also performed using data from before, during, and after the 1972-1976 Supreme Court moratorium on executions. The before-and-after comparisons reveal that as many as 91 percent of states experienced an increase in murder rates after they suspended the death penalty. In about 70 percent of the cases, the murder rate dropped after the state reinstated the death penalty.

I urge you to vote against abolishing the death penalty.

Thank you.

Statistical Evidence on Capital Punishment and the Deterrence of Homicide

Written Testimony for the Senate Judiciary Committee on the Constitution, Civil Rights, and Property Rights
February 1, 2006

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I. Introduction and Summary

Recent research on the relationship between capital punishment and homicide has created a consensus among most economists who have studied the issue that capital punishment deters murder. Early studies from the 1970s and 1980s reached conflicting results. However, recent studies have exploited better data and more sophisticated statistical techniques. The modern refereed studies have consistently shown that capital punishment has a strong deterrent effect, with each execution deterring between 3 and 18 murders. This is true even for crimes that might seem not to be deterrable, such as crimes of passion. (There is some evidence from unrefereed studies that have not been scientifically evaluated that is inconsistent with this generally accepted claim.)

I proceed as follows. Part II explains my qualifications. Part III discusses early research on whether capital punishment deters crime. Part IV describes modern studies, and Part V is a brief summary.

II. My Background and Qualifications.

I am the Samuel Candler Dobbs Professor of Economics and Law at Emory University in Atlanta and editor in chief of *Managerial and Decision Economics*. I am a Fellow of the Public Choice Society and former Vice President of the Southern Economics Association, and associated with the Independent Institute, the Progress and Freedom Foundation, and the American Enterprise Institute. I have been Senior Staff Economist at President Reagan's Council of Economic Advisers, Chief Economist at the U.S. Consumer Product Safety Commission, Director of Advertising Economics at the Federal Trade Commission, and vice-president of Glassman-Oliver Economic Consultants, Inc., a litigation consulting firm in Washington. I have taught law and economics at the University of Georgia, City University of New York, VPI, and George Washington University Law School.

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[1] Joanna Shepherd was a major contributor to this testimony.

I have written or edited seven books, and published over one hundred articles and chapters on economics, law, regulation, and evolution in journals including the *American Economic Review, Journal of Political Economy, Quarterly Journal of Economics, Journal of Legal Studies, Journal of Law and Economics*, the *Yale Journal on Regulation*, and *Human Nature*, and I sometimes contribute to the *Wall Street Journal* and other leading newspapers. My work has been cited in the professional literature over 1400 times. I have consulted widely on litigation related matters and have been an advisor to the Congressional Budget Office on tort reform. I have addressed numerous business, professional, policy and academic audiences.

I received my B.A. from the University of Cincinnati in 1963 and my Ph.D. from Purdue University in 1970. Much of my research has been on statistical analysis of legal issues, including the economics of crime. I was a co-author of the first published paper examining the deterrent effect of capital punishment using data from the period after the moratorium on executions: Hashem Dezhbakhsh, Paul H. Rubin, and Joanna M. Shepherd, Does Capital Punishment Have a Deterrent Effect? New Evidence from Postmoratorium Panel Data, 5 American Law and Economics Review 344 (2003).

II. Early Literature on Capital Punishment and Deterrence.

The initial participants in the debate over the deterrent effect of capital punishment were psychologists and criminologists. Their research was either theoretical or based on comparisons of crime patterns in states with and without capital punishment. However, because they did not use multiple-regression statistical techniques, the analyses were unable to distinguish the effect on murder of capital punishment from the effects of other factors.[2]

The modern economic study of crime began with Gary Becker's famous paper on the economics of crime.[3] The analysis of this paper indicated that criminals should be expected to respond to incentives, including the threat of punishment. Isaac Ehrlich was the first economist to test this theory for the particular case of capital punishment and homicide in two papers in 1975 and 1977.[4] Ehrlich was the first to study capital punishment's deterrent effect using multivariate regression analysis. In contrast to earlier methods, this approach allowed Ehrlich to separate the effects of many different factors on murder. Ehrlich also examined the general deterrent effect of increased severity and probability with respect to prison and other non-capital punishments, and also found a deterrent effect.[5] These results have been much less controversial even though the theoretical basis for the analysis was the same as for capital punishment.

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[2] For example, J.T. Sellin, J. T., The Death Penalty (1959); H. Eysenck, Crime and Personality (1970).

[3] Gary Becker, "Crime and Punishment: An Economic Analysis," 76 Journal of Political Economy 169 (1968).

[4] Isaac Ehrlich, The Deterrent Effect of Capital Punishment: A Question of Life and Death, 65 Am. Econ. Rev. 397 (1975); Isaac Ehrlich, Capital Punishment and Deterrence: Some Further Thoughts and Additional Evidence, 85 J. Pol. Econ. 741 (1977)

[5] Isaac Ehrlich, Participation in Illegitimate Activities: A Theoretical and Empirical Investigation 81 The Journal of Political Economy No. 3 (May, 1973), pp. 521-565.

Ehrlich's 1975 paper examined U.S time-series data for the period 1933-1969. Time-series data are data for one unit (for Ehrlich, for the entire U.S.) over several time periods. He tested the effect on national murder rates of deterrent variables (the probabilities of arrest, conviction, and execution), demographic variables (population, fraction of nonwhites, fraction of people age 14-24), economic variables (labor force participation, unemployment rate, real per capita permanent income, per capita government expenditures, and per capita expenditures on police), and a time variable. He found a statistically significant negative relationship between the murder rate and execution rate, indicating a deterrent effect. Specifically, he estimated that each execution resulted in approximately seven or eight fewer murders.

Ehrlich's 1977 paper studied cross-sectional data from the fifty states in 1940 and 1950. That is, instead of his first paper's approach testing how the total U.S. murder rate changed across time as the execution rate changed, Ehrlich explored the relationship during a single year between each of the states' execution rates and their murder rates. Cross-sectional data are data from several units (here, the fifty states) for one time period (1940 or 1950).

Again, Ehrlich used multivariate regression analysis to separate the effect on murder of different factors. He included deterrent variables (probabilities of conviction and execution, median time spent in prison, and a dummy variable distinguishing executing states from non-executing states), demographic variables (state population, urban population, percent of nonwhites, and percent of people age 15-24 and 25-34), and economic variables (median family income and percent of families with income below half of the median income). The results indicated a substantial deterrent effect of capital punishment on murder.

Ehrlich's finding generated substantial interest in econometric analysis of capital punishment and deterrence. The papers that immediately followed Ehrlich used his original data (1933-1969 national time-series or 1940 and 1950 state level cross section) and variants of his econometric model. Many found a deterrent effect of capital punishment, but others did not. For example, using Ehrlich's data, all of the following found a deterrent effect: Yunker; Cloninger; and Ehrlich and Gibbons.[6] In contrast, Bowers and Pierce; Passel and Taylor; and Hoenack and Weiler find no deterrence when they use the same data with alternative statistical specifications.[7] Similarly, McAleer and Veall; Leamer; and McManus, find no deterrent effect when different variables are included over the same sample period.[8] Finally, Black and Orsagh find mixed results depending on the cross-section year they use.[9]

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[6] James A. Yunker, Is the Death Penalty a Deterrent to Homicide? Some Time Series Evidence, 5 Journal of Behavioral Economics 45 (1976); Dale O. Cloninger, Deterrence and the Death Penalty: A Cross-Sectional Analysis, 6 Journal of Behavioral Economics 87 (1977); Isaac Ehrlich & Joel Gibbons, On the Measurement of the Deterrent Effect of Capital Punishment and the Theory of Deterrence, 6 Journal of Legal Studies 35 (1977).

[7] W. J. Bowers & J.L. Pierce, The Illusion of Deterrence in Isaac Ehrlich's work on Capital Punishment, 85 Yale Law Journal 187 (1975); Peter Passell & John B. Taylor, The Deterrent Effect of Capital Punishment: Another View, 67 American Economic Review 445 (1977); Stephen A. Hoenack & William C. Weiler, A

In the late 1980s and 1990s, a second-generation of econometric studies extended Ehrlich's national time-series data or used more recent cross-sectional data. As before, some papers found deterrence while others did not. For example, Layson, and Cover and Thistle use an extension of Ehrlich's national time-series data, covering up to 1977.[10] Although Layson finds a significant deterrent effect of executions, Cover and Thistle correct for data flaws -- nonstationarity -- and find no deterrent effect. Chressanthis employs national time-series data covering 1966 through 1985 and finds a deterrent effect.[11] In contrast, Grogger uses daily data for California during 1960-1963 and finds no deterrent effect.[12]

However, most of the early studies—both the first wave and the second generation—suffered from fundamental flaws: they suffered important data limitations because they used either national time-series or cross-section data.

Using national time-series data created a serious aggregation problem. Any deterrence from an execution should affect the crime rate only in the executing state; one state's high execution rate would not be expected to change the rate in nearby states, where the first state's laws and courts lack criminal jurisdiction. Aggregation dilutes such distinct effects, creating "aggregation bias." For example, suppose that the following happens concurrently: the murder rate in a state with no executions randomly increases at the same time that the murder rate drops in a state with many executions. Aggregate data might incorrectly lead to an inference of no deterrence; the aggregate data, with the two states lumped together, would show an increase in executions leading to no change in the murder rate.

Cross-sectional studies also suffer serious problems. Most importantly, they preclude any consideration of what happens to crime, law enforcement, and judicial processes over time. Cross-section data also prevent researchers from controlling for jurisdiction-specific characteristics that could be related to murder, such as greater urban density in some states.

Structural Model of Murder Behavior and the Criminal Justice System, 70 American Economic Review 327 (1980).

[8] Michael McAleer & Michael R. Veall, How Fragile are Fragile Inferences? A Re-Evaluation of the Deterrent Effect of Capital Punishment, 71 Review of Economics and Statistics 99 (1989); Edward E. Leamer, Let's Take the Con out of Econometrics, 73 American Economic Review 31 (1983); Walter S. McManus, Estimates of the Deterrent Effect of Capital Punishment: The Importance of the Researcher's Prior Beliefs, 93 Journal of Political Economy 417 (1985).

[9] T. Black & T. Orsagh, New Evidence on the Efficacy of Sanctions as a Deterrent to Homicide, 58 Social Science Quarterly 616 (1978).

[10] Stephen A. Layson, Homicide and Deterrence: A Reexamination of the United States Time-Series Evidence, 52 Southern Economic Journal 68 (1985); James P. Cover & Paul D. Thistle, Time Series, Homicide, and the Deterrent Effect of Capital Punishment, 54 Southern Economic Journal 615 (1988).

[11] George A. Chressanthis, Capital Punishment and the Deterrent Effect Revisited: Recent Time-Series Econometric Evidence, 18 Journal of Behavioral Economics 81 (1989).

[12] Jeffrey Grogger, The Deterrent Effect of Capital Punishment: An Analysis of Daily Homicide Counts, 85 J. of the American Statistical Association 295 (1990).

Several authors expressed similar data concerns with time-series and cross-section data and called for new research using panel data, as I now discuss.[13]

III.   Modern Studies of Capital Punishment's Deterrent Effect.

Most recent studies have overcome the fundamental problems associated with national time-series and cross-section data by using panel-data techniques. Panel data are data from several units (the fifty states or all U.S. counties) over several different time periods; that is, panel data follow a cross-section over time. For example, a panel dataset might include data on each of the fifty states, or even on each U.S. county, for a series of years. These improved data allow researchers to capture the demographic, economic, and jurisdictional differences among U.S. states or counties, while avoiding aggregation bias. Furthermore, panel data produce many more observations than cross-section or time-series data, enabling researchers to estimate any deterrent effect more precisely. In addition to enjoying the benefits of panel data, recent studies have access to more recent data that make conclusions more relevant for the current environment.

Using improved data and more sophisticated regression techniques, twelve refereed papers have been published or are forthcoming in the economics literature. Their conclusion is unanimous: all of the modern refereed papers find a significant deterrent effect.

I now briefly discuss the modern research in the economics literature from the past decade. I group the papers into those that use panel-data techniques and those using other techniques. (I was co-author of one paper, and my colleague Joanna Shepherd was author or co-author of several more.) I then discuss two papers which have been published in journals that do not subject papers to the refereeing process.

A. Modern Papers using Panel-Data Techniques.

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[13] See, e.g., Samuel Cameron, A Review of the Econometric Evidence on the Effects of Capital Punishment, 23 Journal of Socio-Economics 197 (1994) and K.L. Avio, Capital Punishment, in *The New Palgrave Dictionary of Economics and the Law* (Peter Newman, ed. 1998).

1. ▓▓▓e ▓▓▓ ▓▓▓▓.[14] This is the only study to use county-level data, allowing us to estimate better the demographic, economic, and jurisdictional differences among U.S. counties that can affect murder rates. Moreover, the large number of county-level observations extends the empirical tests' reliability.[15] ▓▓▓ ▓▓▓ ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓ Our main finding, that capital punishment has a deterrent effect, is robust to many different ways of performing the statistical analysis[16] and several ways of measuring the probability of an execution. For example, ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓

2. In another paper, Joanna Shepherd uses state-level, monthly panel data from 1977-1999 to examine two important questions in the capital punishment literature.[17] First, she investigates the types of murders deterred by capital punishment. Some people in the debate on capital punishment's deterrent effect believe that certain types of murder are not deterrable. They claim that murders committed during interpersonal disputes, murders by intimates, or unplanned crimes of passion are not intentionally committed and are therefore nondeterrable. She finds that the combination of death row sentences and executions deters all types of murders: murders between intimates, acquaintances, and strangers, crime-of-passion murders and murders committed during other felonies, and murders of both African-American and white people.[18] She estimates that each death row sentence deters approximately 4.5 murders and that each execution deters approximately 3 murders. In this paper she also finds that that shorter waits on death row increase deterrence. Specifically, one extra murder is deterred for every 2.75-years reduction in the death-row wait before each execution.

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[14] Hashem Dezhbakhsh, Paul H. Rubin, and Joanna M. Shepherd, Does Capital Punishment Have a Deterrent Effect? New Evidence from Postmoratorium Panel Data, 5 American Law and Economics Review 344 (2003).

[15] Technically, it extends the analysis' degrees of freedom, increases variability, and reduces colinearity among variables.

[16] The deterrent effect remains with different choices of functional form (double-log, semi-log, or linear), sampling period, endogenous vs. exogenous probabilities, and level vs. ratio specification of the main variables.

[17] Joanna M. Shepherd, Murders of Passion, Execution Delays, and the Deterrence of Capital Punishment, 33 Journal of Legal Studies 283 (2004).

[18] Intimates are defined as spouses, common-law spouses, parents, children, siblings, in-laws, step-relations, and other family. Crime-of-passion murders include lovers' triangles, murders by babysitters, brawls under alcohol, brawls under drugs, arguments over money, other arguments, and abortion-murders (abortions performed during the murder of the mother).

3. ~~Hashem Dezhbakhsh and Joanna Shepherd use state-level panel data from 1960~~ ~~2000 to examine capital punishment's deterrent effect.~~[19] This is the only study to use data from before, during, and after the 1972-1976 Supreme Court moratorium on executions. The study advances the deterrence literature by exploiting an important characteristic that other studies overlooked: the quasi-experimental nature of the Supreme Court moratorium. First, they perform before-and-after moratorium comparisons by comparing the murder rate for each state immediately before and after it suspended or reinstated the death penalty. These before-and-after comparisons are informative because many factors that affect crime—e.g., law enforcement, judicial, demographic, and economic variables—change only slightly over a short period of time. In addition, the moratorium began and ended in different years in different states. Considering the different start and end dates, the duration of the moratorium varied considerably across states, ranging from four to thirty years. Observing similar changes in murder rates immediately after the same legal change in different years and in various states provides additional evidence of the moratorium's effect on murder. ~~The before-and-after comparisons reveal that as many as 91 percent of states experienced an increase in murder rates after they suspended the death penalty. In about 70 percent of the cases the murder rate dropped after the state reinstated the death penalty.~~ They supplement the before-and-after comparisons with time-series and panel-data regression analyses that use both pre- and postmoratorium data. These estimates suggest that both adopting a capital statute and exercising it have strong deterrent effects.[20]

4 and 5. Two papers by FCC economist Paul Zimmerman find a deterrent effect.[21] Zimmerman uses state-level panel data from 1978 to 1997 to examine the relationship between state execution rates and murder rates. In a second paper, he employs state-level panel data from 1978-2000 to examine which execution methods have the strongest deterrent effects. In both papers, Zimmerman finds a significant deterrent effect of capital punishment. He estimates that each execution deters an average of 14 murders and that executions by electrocution have the strongest impact.

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[19] Hashem Dezhbakhsh and Joanna M. Shepherd, The Deterrent Effect of Capital Punishment: Evidence from a "Judicial Experiment," (Emory University Working Paper, 2003; forthcoming, Economic Inquiry, 2006).

[20] We also confirm that our results hold up to changes in our choice of regressors, estimation method, and functional form. The deterrent variables' coefficients are remarkably consistent in sign and significance across 84 different regression models. In addition, we verify that the negative relationship between the death penalty and murder is not a spurious finding. Before-and-after moratorium comparisons and regressions reveal that the death penalty does not cause a decrease in property crimes, suggesting that the deterrent effect is not reflecting general trends in crime.

[21] Paul R. Zimmerman, Estimates of the Deterrent Effect of Alternative Execution Methods in the United States: 1978-2000, American Journal of Economics and Sociology (forthcoming); Paul R. Zimmerman, State Executions, Deterrence, and the Incidence of Murder, Journal of Applied Economics (forthcoming).

6. H. Naci Mocan and R. Kaj Gittings use state-level panel data from 1977 to 1997 to examine the relationship between executions, commutations, and murder.[22] Again, the authors find a significant deterrent effect; they estimate that each execution deters an average of 5 murders. Their results also indicate that both commuting death-row prisoners' sentences and removing them from death row cause increases in murder. Specifically, each commutation results in approximately five extra murders and each removal from death row generates one additional murder.

7. Another recent paper by Lawrence Katz, Steven D. Levitt, and Ellen Shustorovich uses state-level panel data covering the period 1950 to 1990 to measure the relationship between prison conditions, capital punishment, and crime rates.[23] They find that the death rate among prisoners (a proxy for prison conditions) has a significant, negative relationship with overall violent crime rates and property crime rates. As expected, the execution rate has no statistically significant relationship with overall violent crime rates (which consist mainly of robbery and aggravated assault rates) and property crime rates; that is, executions have no effect on non-capital crimes. In several estimations, both the prison death rate and the execution rate are found to have significant, negative relationships with murder rates. The deterrent effect of executions is especially strong in the estimations that control for the economic and demographic differences among states.[24]

B. Modern Papers Using Other Techniques

8. Instead of a panel-data study, Dale O. Cloninger and Roberto Marchesini conduct a portfolio analysis in a type of controlled group experiment: the Texas unofficial moratorium on executions during most of 1996.[25] They find that the moratorium appears to have caused additional homicides and that murder rates significantly decreased after the moratorium was lifted.

9. Harold J. Brumm and Dale O. Cloninger use cross-sectional data covering 58 cities in 1985 to distinguish between criminals' perceived risk of punishment and the ex-post risk of punishment measured by arrest rates, conviction rates, or execution rates.[26] They find that the perceived risk of punishment, including the probability of execution, is negatively and significantly correlated with the homicide commission rate.

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[22] H. Naci Mocan and R. Kaj Gittings, Getting Off Death Row: Commuted Sentences and the Deterrent Effect of Capital Punishment, 46 Journal of Law and Economics 453 (2003).
[23] Lawrence Katz, Steven D. Levitt, & Ellen Shustorovich, Prison Conditions, Capital Punishment, and Deterrence, 5 American Law and Economics Review 318 (2003).
[24] The authors' accompanying commentary focuses on other aspects of their results.
[25] Dale O. Cloninger & Roberto Marchesini, Execution and Deterrence: A Quasi-Controlled Group Experiment, 35 Applied Economics 569 (2001).
[26] Harold J. Brumm and Dale O. Cloninger, Perceived Risk of Punishment and the Commission of Homicides: A Covariance Structure Analysis, 31 Journal of Economic Behavior and Organization 1 (1996).

10. James A. Yunker tests the deterrence hypothesis using two sets of post-moratorium data: state cross-section data from 1976 and 1997 and national time-series data from 1930-1997. [27] He finds a strong deterrent effect in the time-series data that disappears when the data are limited to the 1930-1976 period. Therefore, he concludes that postmoratorium data is critical in testing of the deterrence hypothesis.

11 and 12. Two other papers, one by Isaac Ehrlich and Zhiqiang Liu and the other by Zhiqiang Liu, use Ehrlich's original state-level, cross-section data. [28] The study by Ehrlich and Liu offers a theory-based sensitivity analysis of estimated deterrent effects and finds that executions have a significant deterrent effect. Liu's study uses switching regression techniques in estimations that take into account the endogenous nature of the status of the death penalty. He also finds a strong deterrent effect.

C. Unrefereed Papers

One paper in the Michigan Law Review by Joanna Shepherd looks at data by states. [29] She finds a "threshold effect." States that have executed more than approximately nine murderers exhibit deterrence; in states that have executed fewer persons, there is either no effect or a "brutalization effect," indicating that capital punishment has led to an increase in the number of murders. Overall, capital punishment has led to a net saving of lives. More lives could be saved if states with few executions either ceased executions or alternatively, if they pursued capital punishment more vigorously. While this paper was not published in a refereed journal, it was presented at several universities and posted for comments at online services such as SSRN.

A recent paper in the Stanford Law Review questions some of these studies. [30] This paper purports to show that the estimates of a deterrent effect are "fragile" and can be changed by statistical manipulation. The results of this paper have not been evaluated by competent scholars; the Stanford Law Review, like all law reviews, is edited by students who have no particular competence in econometrics. Moreover, Professors Wolfers and Donohue chose not to make their paper available online through a service such as SSRN or the BE Press, so that the scholarly community did not have access to their analysis before it was published. Steps are in process to generate such an analysis, but at this point the weight of evidence must be interpreted as finding a deterrent effect. Moreover, although Professors Donohue and Wolfers had access to all of the papers mentioned in this testimony, they chose to comment on only some of these papers.

V. Summary

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[27] James A. Yunker, A New Statistical Analysis of Capital Punishment Incorporating U.S. Postmoratorium Data, 82 Social Science Quarterly 297 (2002).
[28] Isaac Ehrlich & Zhiqiang Liu, Sensitivity Analysis of the Deterrence Hypothesis: Lets Keep the Econ in Econometrics, 42 Journal of Law and Economics 455 (1999); Zhiqiang Liu, Capital Punishment and the Deterrence Hypothesis: Some New Insights and Empirical Evidence, Eastern Economic J. (forthcoming)
[29] Joanna M. Shepherd, "Deterrence versus Brutalization: Capital Punishment's Differing Impacts among States," 104 Michigan Law Review November 2005, 203-255.
[30] John J. Donohue and Justin Wolfers, "Uses and Abuses of Empirical Evidence in the Death Penalty Debate," 58 Stanford Law Review 789.

The literature is easy to summarize: almost all modern studies and all the refereed studies find a significant deterrent effect of capital punishment. Only one study questions these results. To an economist, this is not surprising: we expect criminals and potential criminals to respond to sanctions, and execution is the most severe sanction available.